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EXAMINER

3401

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/719,341

Applicant(s)
Mannava et al.

Examiner
Christopher Verdier

Group Art Unit
3401



☒ Responsive to communication(s) filed on Sep 2, 1997

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-20 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-20 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on Mar 6, 1995 is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Applicants' Amendment dated September 2, 1997 has been carefully considered but is deemed non-persuasive. Claims 1-20 are pending. Applicants have amended the specification to correct the informalities noted therein in the first Office action. Applicants have submitted the US equivalent of French Patent 2,172,727, which will be considered by the examiner.

Applicants have argued concerning the objection to figure 1 as not utilizing hatching to indicate the sectional portions that no objections in the Mannava Patent 5,591,009 or any other related patent have been made and thus no correction is required. The examiner disagrees because although the previous different examiners of record did not make such an objection, MPEP 608.02(h)(3) clearly indicates that cross sectional views must be illustrated using hatching. There is nothing in MPEP 608.02 to preclude the examiner from making an objection to the drawings if different examiners of record did not make the same drawing objection.

Applicants have amended the claims in response to the rejections under 35 USC 112, second paragraph set forth in the first Office action. However, these amendments introduce new vague and indefinite claim language which is set forth later below.

Applicants have argued concerning the rejection of claims 1-20 under 35 U.S.C. 102(e) as being clearly anticipated by Mannava 5,591,009 that Mannava does not disclose a compressor blade and the claims are not anticipated by Mannava '009. The examiner disagrees with this

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argument. Firstly, claims 1-5 do not claim a compressor blade at all, but a “gas turbine engine component”. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. *In re Van Guens*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Secondly, the term “compressor blade” appears in the preamble of claims 6-8, 11-13, and 16-18. The recitation of the “compressor blade” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976); *Kropa v. Robie*, 88 USPQ 478, 481 (CCPA 1951). However, Applicant is correct concerning claims 9-10, 14-15, and 19-20 which positively recite the compressor blade in the body of the claim. The rejection of claims 9-10, 14-15, and 19-20 under 35 U.S.C. 102(e) as being clearly anticipated by Mannava 5,591,009 is hereby withdrawn. The examiner notes, however, that the subject matter of claims 9-10, 14-15, and 19-20 is obvious under 35 USC 103 as set forth later below.

Applicants have argued concerning the rejection of claims 1-8, 11-13, and 16-18 under 35 U.S.C. 103(a) as being unpatentable over Neal in view of the article “Laser Shocking Extends Fatigue Life” and the article “Lasers Permit Precision Surface Treatments” that the article “Lasers Permit Precision Surface Treatments” does not teach laser shock peening for the purpose of

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reducing wear because the valve seats are laser hardened by heat treatment and that this reference does not teach laser shock peening that imparts deep compressive residual stresses extending into the surface to a depth in the range of 20-50 mils. The examiner agrees with this argument.

Applicants have also argued that the combination of the article "Laser Shocking Extends Fatigue Life" and Neal teach away from the instant invention because the present invention uses a much greater stress level to a far greater depth than Neal while Neal teaches that the impact of the shot is to be at a maximum oblique angle to the tangent of the edge surface which is designed to lessen the peening force to avoid deformation. Applicants have also argued that the obliqueness of the shot hits in Neal lowers the residual compressive stress levels and would teach one skilled in the art to stay away from the force of using laser shock peening. The examiner disagrees with these arguments because column 6, lines 11-33 of Neal are directed only to an illustrative example. It would have been obvious to a person of ordinary skill in the art to select the intensity of the shock peening such that the residual compressive stresses extend in the range of 25-50 mils since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Note also *In re Aller*, 105 USPQ 233, 235 (CCPA 1955) and *In re Woodruff* 16USPQ2d 1934, 1936 (Fed. Cir. 1990). The Woodruff case points out that where the difference between the prior art and the claimed invention is some range or other variable within the claim, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.

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Applicants have also argued that the prior art references do not have the same purposes as each other or as the present invention, that the examiner has impermissibly used hindsight in making the combinations, and that there is no suggestion in the references for the proposed combinations under 35 UCS 103. The examiner disagrees with these arguments and recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would have been motivated to make the proposed combination of the primary and secondary references. *In re Nomiya*, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation be expressly articulated. The test for combining references is what the combination of the disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re Simon*, 174 USPQ 114 (CCPA 1972); *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather than their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA 1969). In the instant case, Neal is relied upon to teach peening of a compressor blade and the American Machinist article is relied upon to teach that it is known to laser shock peen turbine blades and both sides of a general workpiece. In addition, it does not matter that a reference does not solve the same problem that the claimed invention is solving or that the suggestion for combining the prior art is to achieve an end or purpose different from that which the applicants may have had in mind. *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990); *In re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper

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hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. *In re McLaughlin*, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971).

The examiner notes that Applicants will take appropriate action at the conclusion of prosecution to address the double patenting rejections.

Drawings

The drawings are objected to because in figure 1, hatching has not been utilized to indicate the sectional portions. Correction is required.

Claim Objections

Claims 1-10 are objected to because of the following informalities: Appropriate correction is required.

In claim 1, line 13, "shocked" should be changed to -- shock --.

In claim 2, second to last line, "shocked" should be changed to -- shock --.

In claim 6, third to last line, "shocked" should be changed to -- shock --.

In claim 7, second to last line, "shocked" should be changed to -- shock --.

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Claim Rejections - 35 USC § 112

Claims 2-5, 7-9, and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 2, last three lines, "wherein said deep compressive ... into said region" is ambiguous in that it is unclear if this refers to the first or the second laser shock peened surface or the first or the second region. Claim 7, last three lines are similarly ambiguous. In claim 17, line 19, "third regions" is a double recitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claims 1-5, 6-8, 11-13, and 16-18 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Mannava 5,591,009.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-10, 14-15, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mannava '009 in view of Neal. Mannava '009 discloses a repaired laser shock peened gas turbine engine component substantially as claimed, but does not disclose that the component is a compressor blade.

Neal (column 2, lines 65-68) teaches compressor blades may be peened for the purpose of reducing compressor blade fatigue.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize the repaired laser shock peened gas turbine engine component of Mannava for the compressor blades as taught by Neal for the purpose of reducing compressor blade fatigue.

Claims 1-8, 11-13, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal in view of the article "Laser Shocking Extends Fatigue Life". Neal (figures 1-10) discloses a metallic turbine blade substantially as claimed having a leading edge 22, a trailing edge 24, a pressure side 26, a suction side 28 with shot peening of the leading and trailing edges and first and second regions of deep residual compressive stresses extending into the airfoil from first and second respective shot peened surfaces at a depth of 7 mils. However, Neal does not disclose that the peening is by laser shock peening, does not disclose that both the pressure and suction side are laser shock peened, and does not disclose that the depth of the residual compressive stresses is 20-50 mils.

The article "Laser Shocking Extends Fatigue Life" (column 3, lines 12-19 and lines 37-38) teaches that it is known to laser shock peen turbine blades and both sides of a general workpiece for the purpose of extending the fatigue life.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to peen the blade of Neal with laser shock peening on both sides of the blade as taught by the article "Laser Shocking Extends Fatigue Life" for the purpose of extending the fatigue life of the blade.

Concerning the recitation of the residual compressive stresses extending in the range of 25-50 mils, it would have been obvious to a person of ordinary skill in the art to select the intensity of the shock peening such that the residual compressive stresses extend in the range of 25-50 mils since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Note also *In re Aller*, 105 USPQ 233, 235 (CCPA 1955) and *In re Woodruff* 16USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claims 9, 10, 14, 15, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal and the article "Laser Shocking Extends Fatigue Life" as applied to claims 8, 6, 13, 11, 18, and 16, respectively above above, and further in view of Fraser '252. The modified blade of Neal shows all of the claimed subject matter except for the blade being a repaired blade.

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Fraser '252 (figure 2) teaches that it is known to repair turbine blades by an insert 21 welded to a blade 11 for the purpose of economically repairing the blade.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to repair the modified blade of Neal by welding an insert to the blade if it becomes damaged as taught by Fraser for the purpose of economically repairing the blade.

Double Patenting

The non-statutory double patenting rejection, whether of the obviousness-type or non-obviousness-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(b) and © may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 16, 17, and 18 are rejected under the judicially created doctrine of double patenting over claims 1, 1, 3, 1, 3, 1, 1, 3, 1, 1, 3, 1, 1, and 3,

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respectively, of U. S. Patent No. 5,591,009 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: All of the limitations in claim 1, lines 1-12, and claims 3-4 in their entirety of US Patent 5,591,009

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claims 1-20 are also rejected under the judicially created doctrine of double patenting over claims 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, and 1, respectively, of U. S. Patent No. 5,531,570 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: All of the limitations in claim 1, lines 1-12 of US Patent 5,531,570.

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Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claims 9-10, 14-15, and 19-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4, 4, 4, 4, 4, and 4, respectively, of U.S. Patent No. 5,591,009 in view of Neal. Claim 4 of US Patent '009 claims substantially the same subject matter as the instant application except for the gas turbine engine component being a compressor blade.

Neal (column 2, lines 65-68) teaches compressor blades may be peened for the purpose of reducing compressor blade fatigue.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the gas turbine engine component of Mannava as the compressor blades as taught by Neal for the purpose of reducing compressor blade fatigue.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Verdier whose telephone number is (703) 308-2638. The examiner can normally be reached on Monday-Friday from 9:00 a.m. to 5:30 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached on (703) 308-1044. The fax phone number for this Group is (703) 305-3463.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [edward.look@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

CV
December 2, 1997


Christopher Verdier
Primary Examiner
Art Unit 3401